SERVICE MANUAL & PARTS LIST (with price)

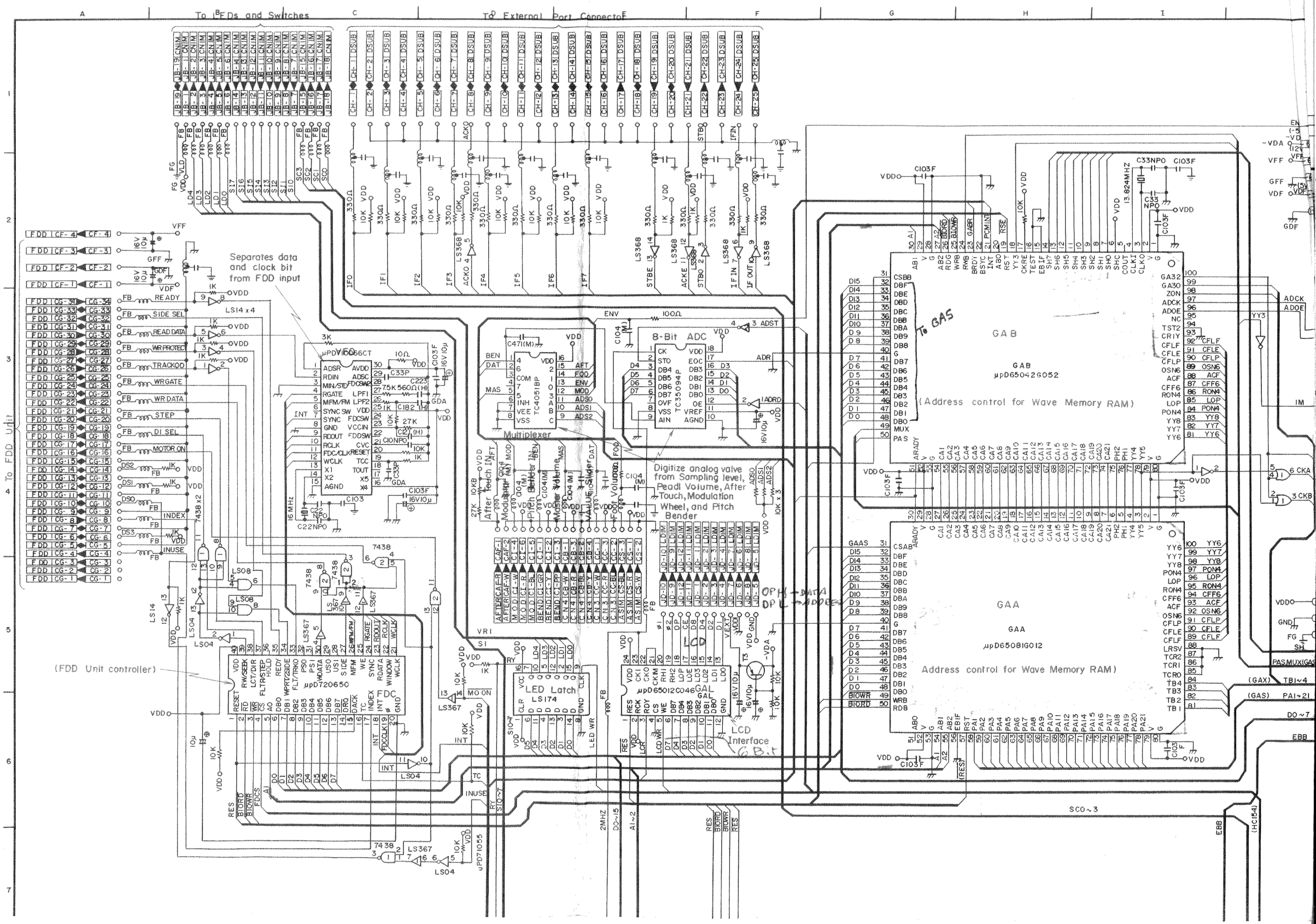
Digital Sampling Keyboard

FZ-1

APR. 1987

CASIO®

SCHEMATIC DIAGRAM 1. PCB M5336-MA1M (1/2)



Serial-Parallel Converter

16-Bit ADC
Digitizes sampling sound

Sampling sound signal

Single sound output

Demultiplexer
Separates 4-channel multiplex signal into single weveform.

Multiplex sound waveform.
Contains 4 sounds.

Converts 16-bit digital data into a waveform for playbacking a sound.

Control volume and cutoff frequency of playback sound.

Buss Buffer

To MA2M PCB

2MHz Oscillator (for MIDI)

CPU Reset Circuit

TC40H004(1/6) x5

CPU
μPD70216

16MHz Oscillator

Bidirectional Bus Buffer

Address Latch

System ROM/RAM Chip Selector

HC154 Chip Selector

μPD43256C-1 System RAM1

μPD27C256EC12-FZ1 System ROM1

μPD43256C-2 System RAM2

μPD23C256EC12-FZ2 System ROM2

μPD71055C-1 I/O Port 1 (FDC, GAA, GAB Controller)

μPD71055C-2 I/O Port 2 (Switch scanning, Sample sound gain, FDC Controller)

Decoder

SN74LS139N

EBB

I02S

INT49

BMWR

BMRD

WREB

REF

ASTB

UBE

A0

A7

KBRD

RSET

RY

R

A0~15

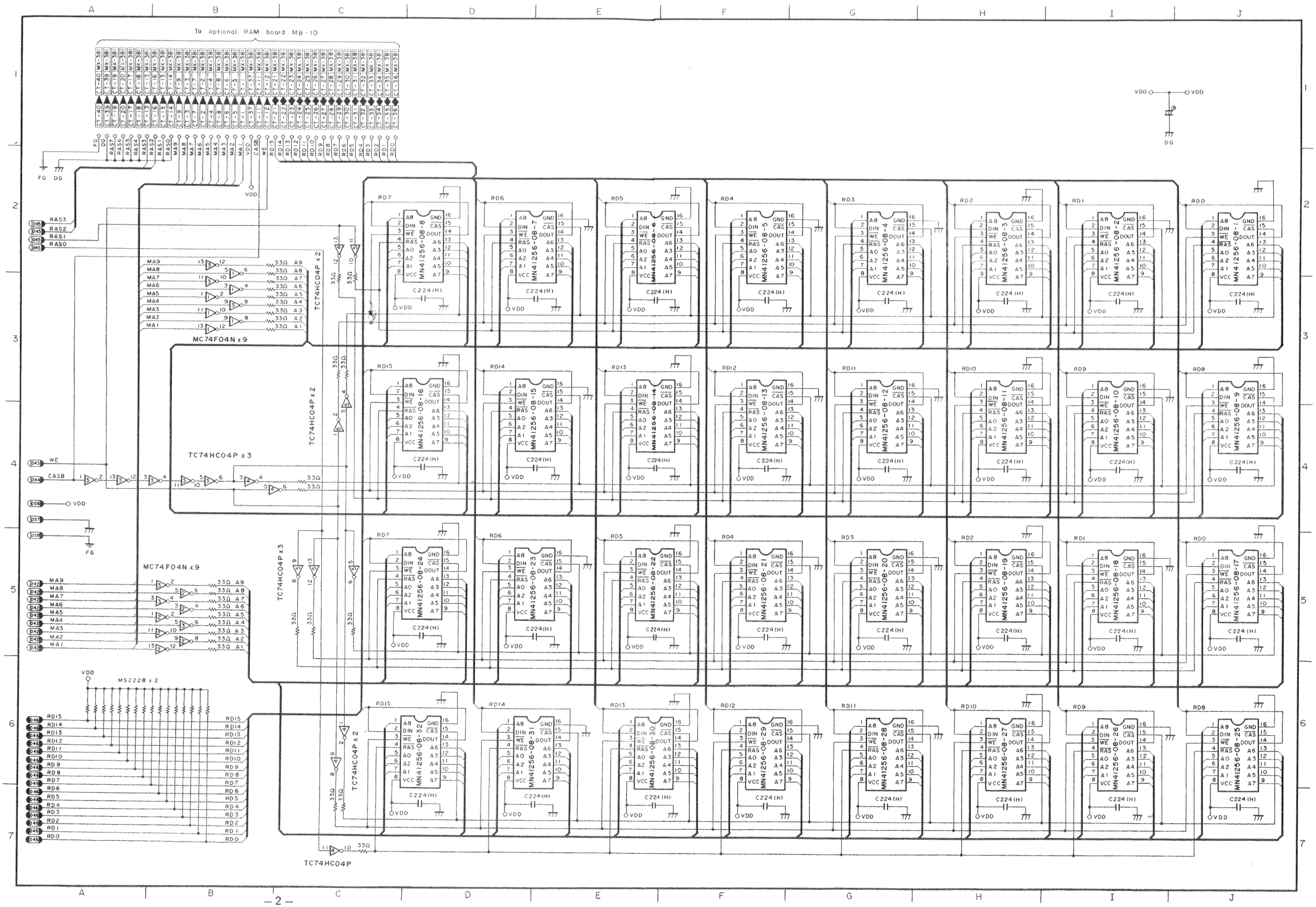
D0~15

168~218

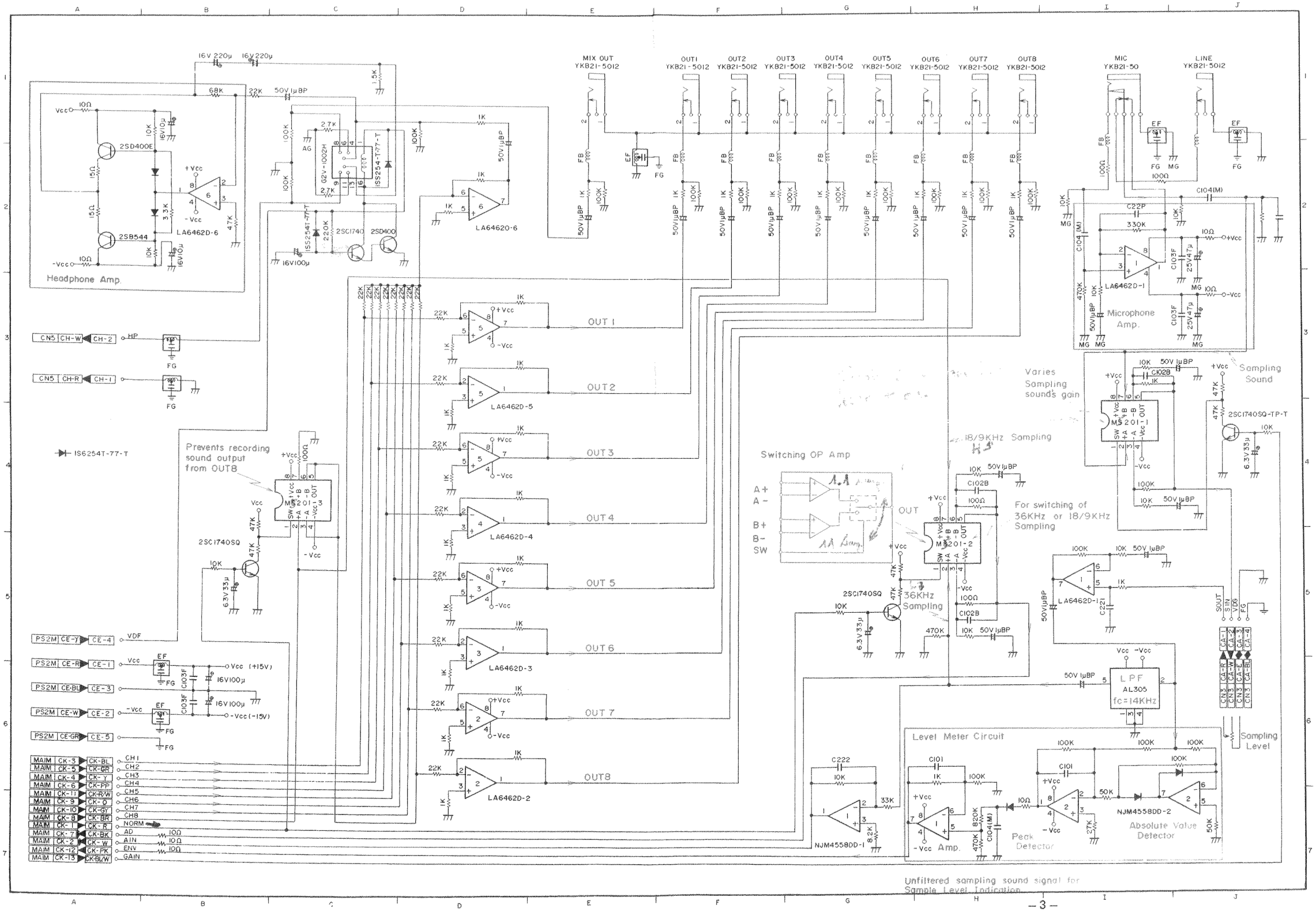
(μPD71055)

B-65 -VDA
B 66 VFF
B 67 GFF
B 68 VDF DF
B 69 GDF RY
RES
RD0~15
A24.5
PAI~21
TBI~4
BO~15
AO~15
NORM,GAIN
R
16B~21B
(μpD71055)
A0~15
I6B
GAS
μpD65012G074
GAS
· Controls refreshing of Wave Memory RAM
· Selects Wave Memory RAM address either from CPU or GAA
GAX
MB8653121
GAS
Output data from Wave Memory RAM alternately to 16-Bit DACs
To KeyBoard
CJ-1 KYIM
CJ-2 KYIM
CJ-3 KYIM
CJ-4 KYIM
CJ-5 KYIM
CJ-6 KYIM
CJ-7 KYIM
CJ-8 KYIM
CJ-9 KYIM
CJ-10 KYIM
CJ-11 KYIM
CJ-12 KYIM
CJ-13 KYIM
CJ-14 KYIM
CJ-15 KYIM
CJ-16 KYIM
CJ-17 KYIM
CJ-18 KYIM
CJ-19 KYIM
FG A-47
-VCC A-48
GCC A-49
VCC A-50
-VDA A-51
GDA A-52
VDA A-53
GND A-54
VDD A-55
GDA
VDD
1M
TC40H004P
TC40H004P-2
CSA2.47MG
f=2.47MHz
C30NPO
C103
16V10μ
NJM4558DD
56Ω
33K
10KB VR2
22K
SYNC49
f=8.96MHz
C103(M)
C103F
μpD8049HC-672
Key Controller
3.3K
E-42 MA0~8
E-43 WE
E-44 CASB
E-45 RAS0~7
E-46 RD0~15
E-56 VDD
E-57 GND
E-58 FG
B-59 VDD
B-60 GND
B-61 FG
DRAM
To Wave Memory RAMs
CENB
CWRB
MS2228 x 2
Bidirectional Bus Buffer
LS245-3
LS245
LS244
Bus Buffer
C-62 VDD
C-63 GND
C-64 FG
D-62
D-63
D-64
(μpD71055)
DO~15
KBRD
INT49
RSET
+VCC
GCC
-VCC
VDF
GDF
VDA
GDA
-VDA
GFF
VFF
(+15V)
(GND)
(-15V)
(5V)
(12V)
(FG)
CD-13 CD-BW PS2M
CD-11 CD-RW PS2M
CD-12 CD-PK PS2M
CD- 4 CD- Y PS2M
CD- 3 CD-BL PS2M
CD- 8 CD-BR PS2M
CD-10 CD-GY PS2M
CD- 9 CD- 0 PS2M
CD- 7 CD-BK PS2M
CD- 6 CD-PP PS2M
CD- 5 CD-GR PS2M
CD- 2 CD-W PS2M
CD- 1 CD-R PS2M
CD-14 CD-YW PS2M
CONT49
HC74-2
RESET
K
L
M
N
O
P
Q
R
S
T

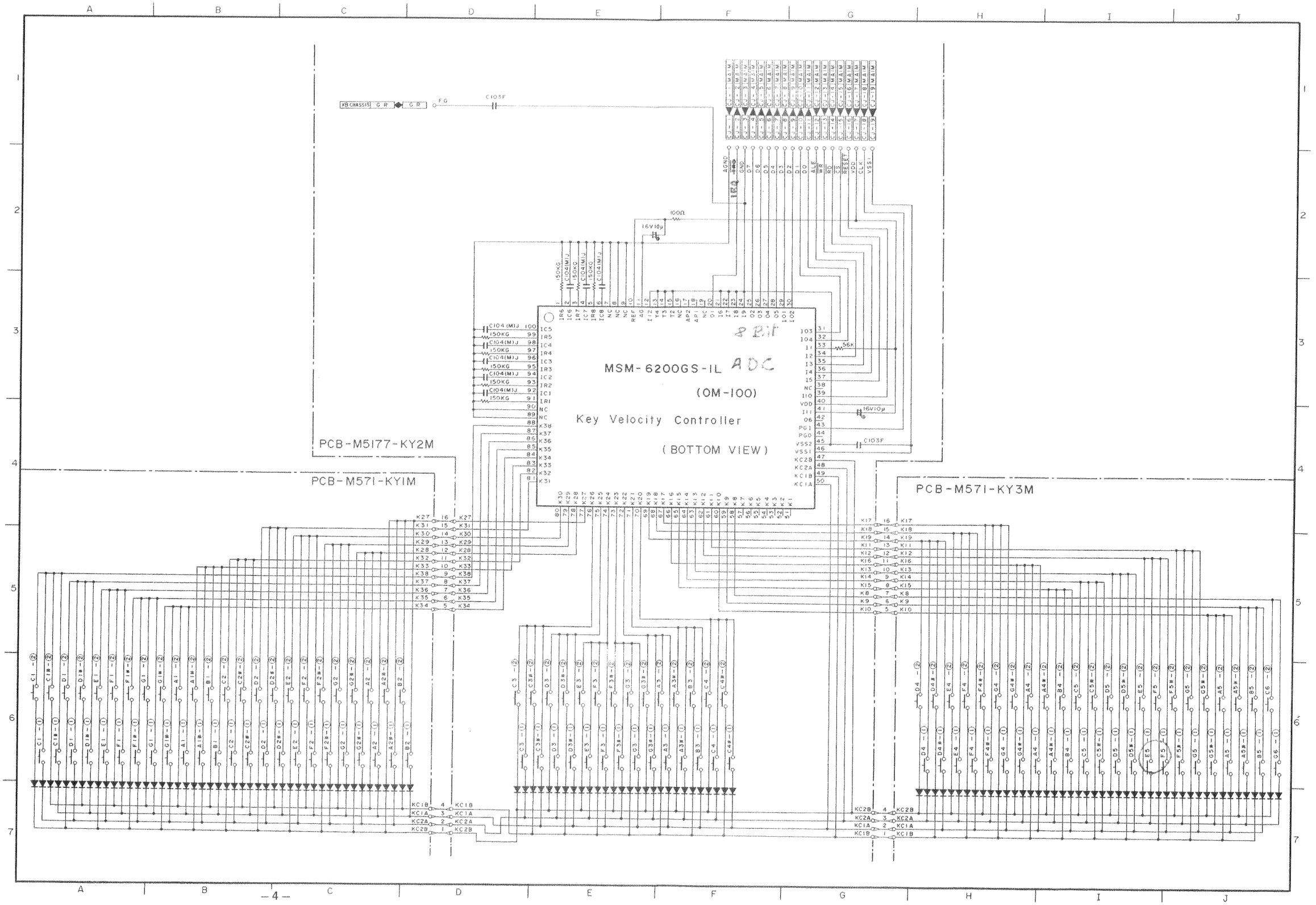
2. PCB M5336-MA1M (2/2)

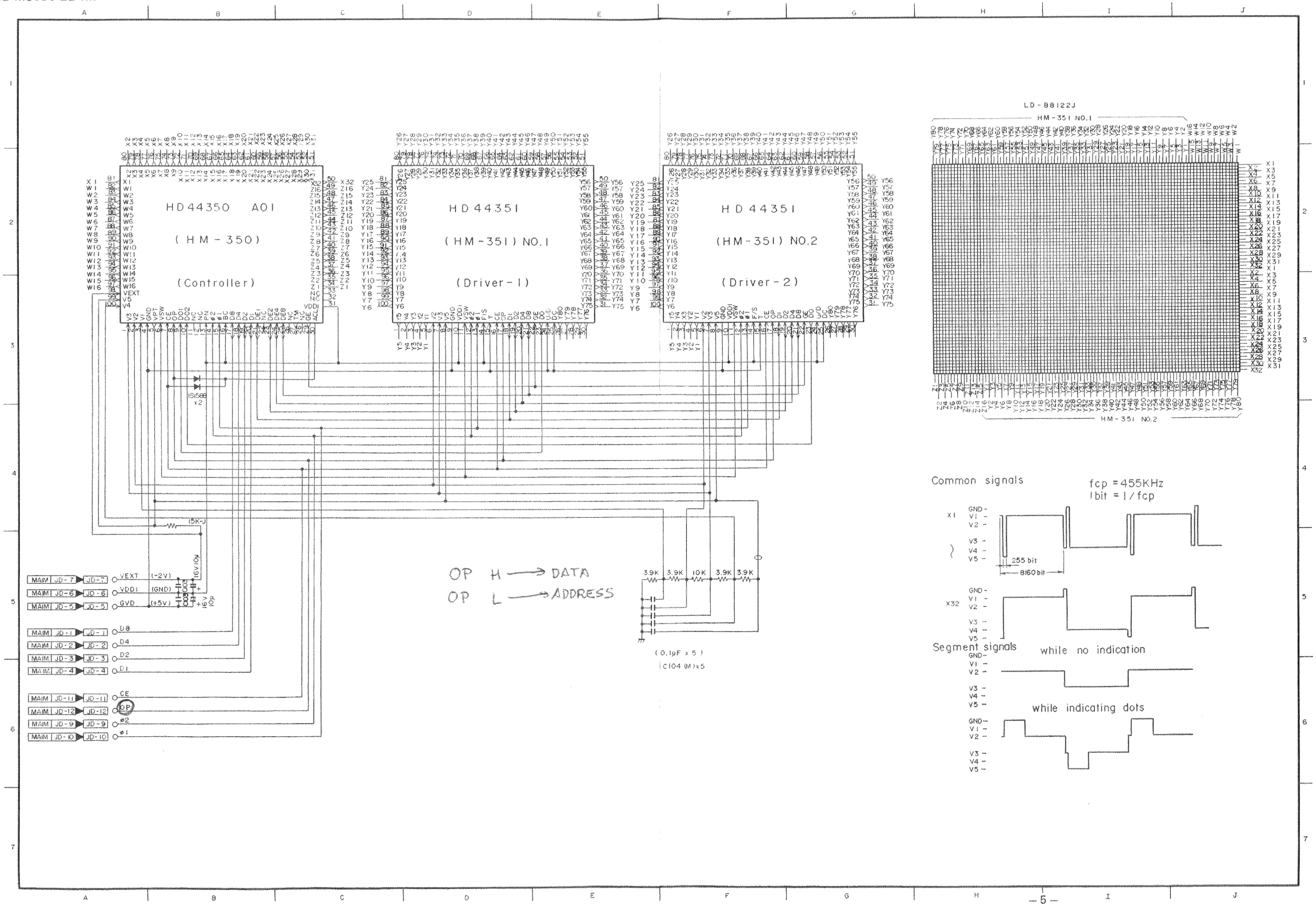


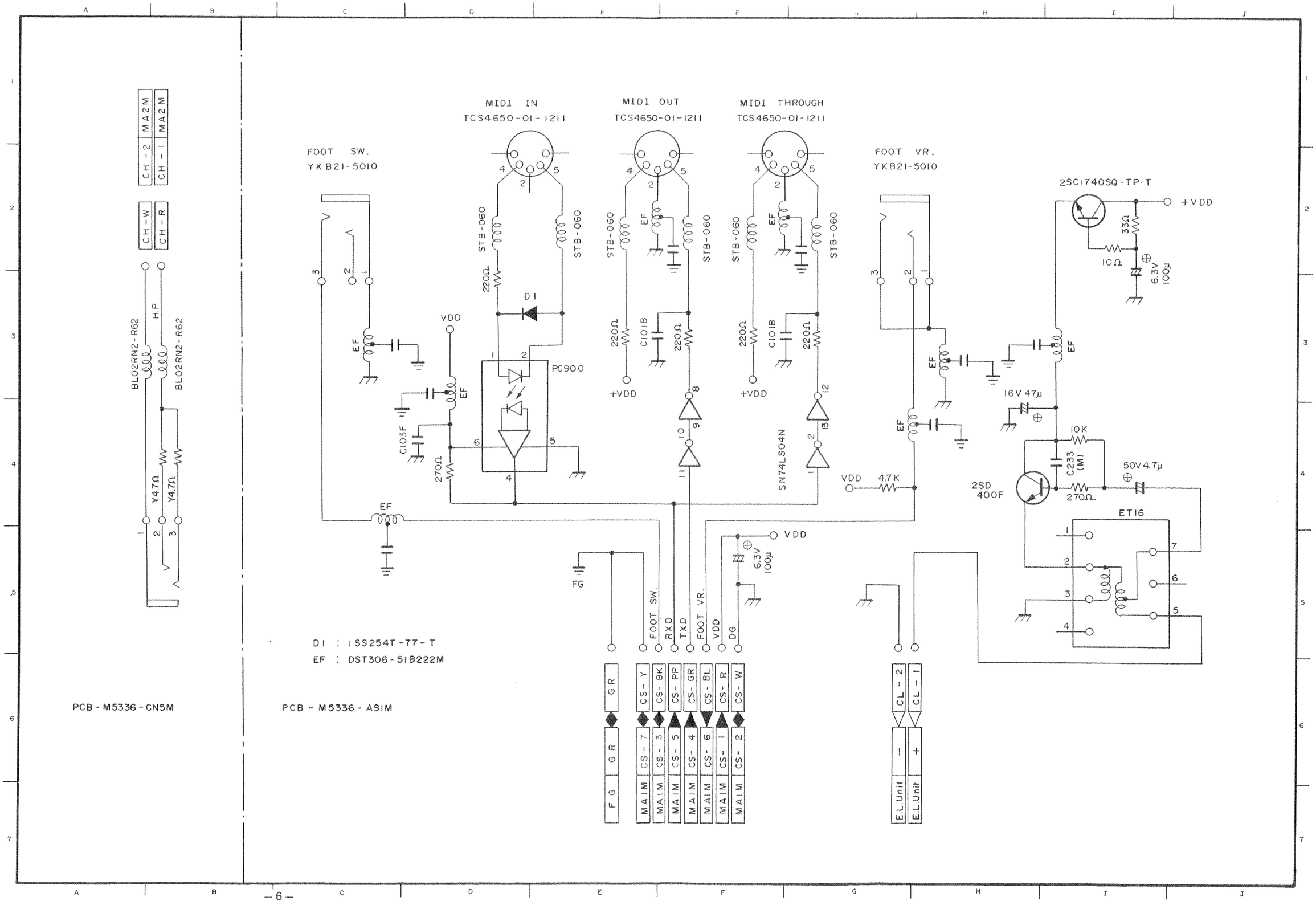
3. PCB M5336-MA2M



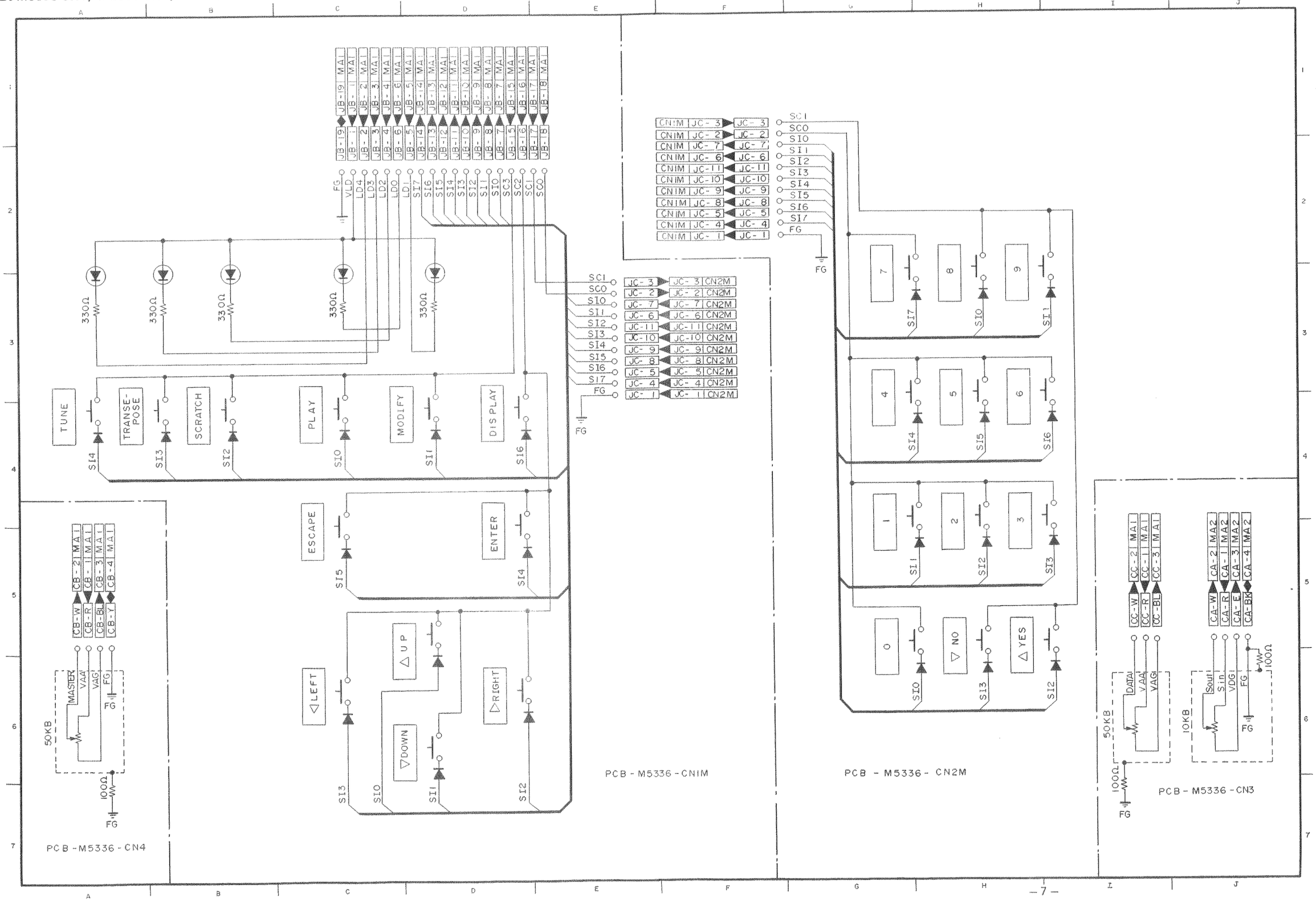
4. PCBs M571-KY1M, M5177-KY2M, M571-KY3M

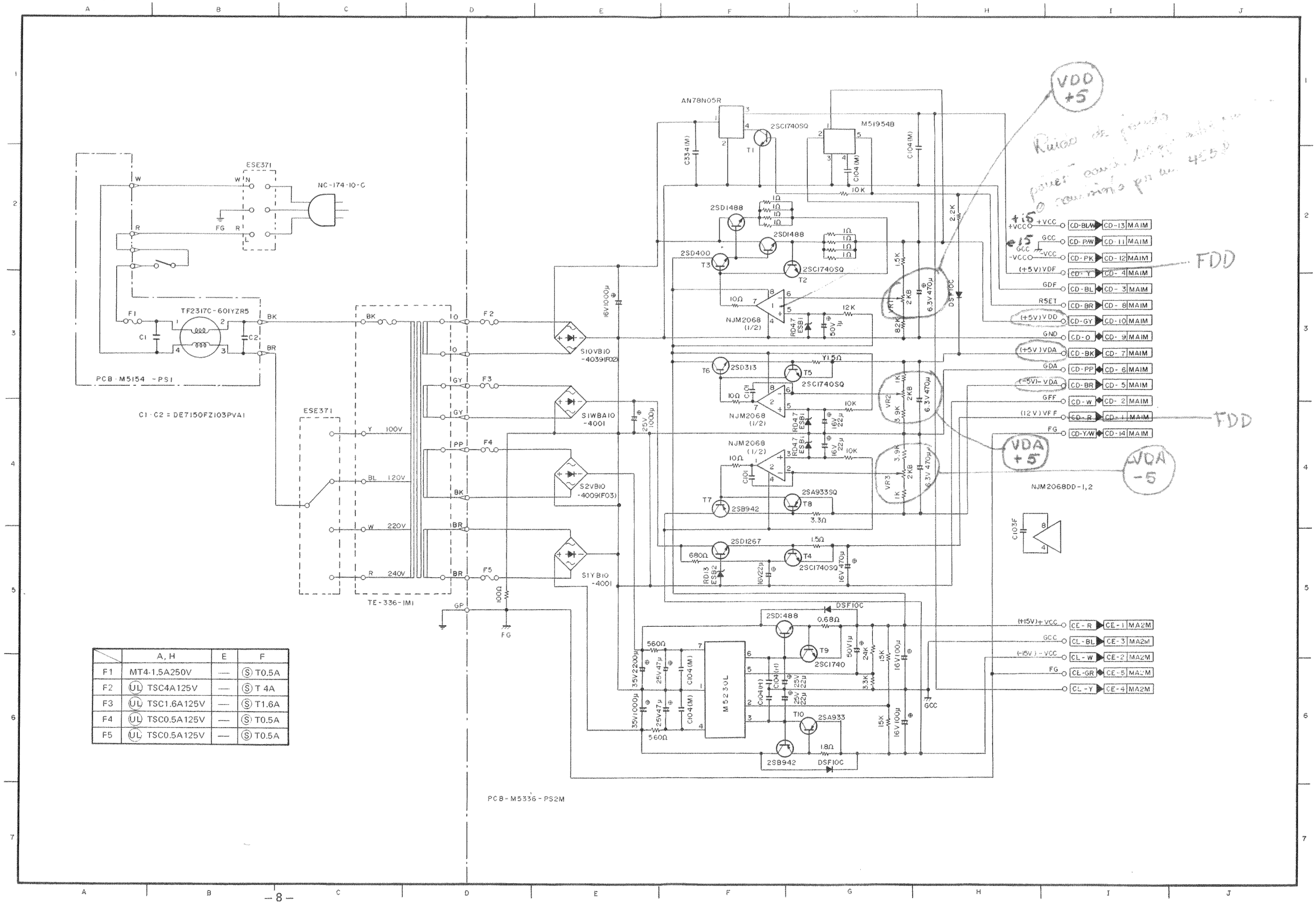



HD44350 A01
(HM-350)
(Controller)
HD44351
(HM-351) NO.1
(Driver-1)
HD44351
(HM-351) NO.2
(Driver-2)
15K-J
MAIN JD-7 JD-7 VEXT (-2V)
MAIN JD-6 JD-6 VDD1 (GND)
MAIN JD-5 JD-5 GVD (+5V)
MAIN JD-1 JD-1 D8
MAIN JD-2 JD-2 D4
MAIN JD-3 JD-3 D2
MAIN JD-4 JD-4 D1
MAIN JD-11 JD-11 CE
MAIN JD-12 JD-12 DP
MAIN JD-9 JD-9 Ø2
MAIN JD-10 JD-10 Ø1
OP H → DATA
OP L → ADDRESS
3.9K 3.9K 10K 3.9K 3.9K
(0.1μF x 5)
C104 (M) x5
LD-88122J
HM-351 NO.1
HM-351 NO.2
Common signals
fcp = 455KHz
1bit = 1/fcp
X1
X32
255 bit
8160 bit
Segment signals
while no indication
while indicating dots


CH-2
MA2M
CH-1
MA2M
CH-W
CH-R
BL02RN2-R62
H.P
BL02RN2-R62
Y4.7Ω
Y4.7Ω
MIDI IN
TCS4650-01-1211
MIDI OUT
TCS4650-01-1211
MIDI THROUGH
TCS4650-01-1211
FOOT SW.
YKB21-5010
FOOT VR.
YKB21-5010
STB-060
220Ω
D1
EF
VDD
PC900
C103F
270Ω
C101B
+VDD
SN74LS04N
2SC1740SQ-TP-T
33Ω
10Ω
6.3V
100μ
16V 47μ
10K
C233 (M)
50V 4.7μ
2SD 400F
270Ω
ET16
4.7K
FG
FOOT SW.
RXD
TXD
FOOT VR.
VDD
DG
GR
CS-Y
CS-BK
CS-PP
CS-GR
CS-BL
CS-R
CS-W
MAIM
CS-7
CS-3
CS-5
CS-4
CS-6
CS-1
CS-2
FG
GR
CL-2
CL-1
E.L.Unit
D1 : 1SS254T-77-T
EF : DST306-51B222M
PCB-M5336-CN5M
PCB-M5336-ASIM

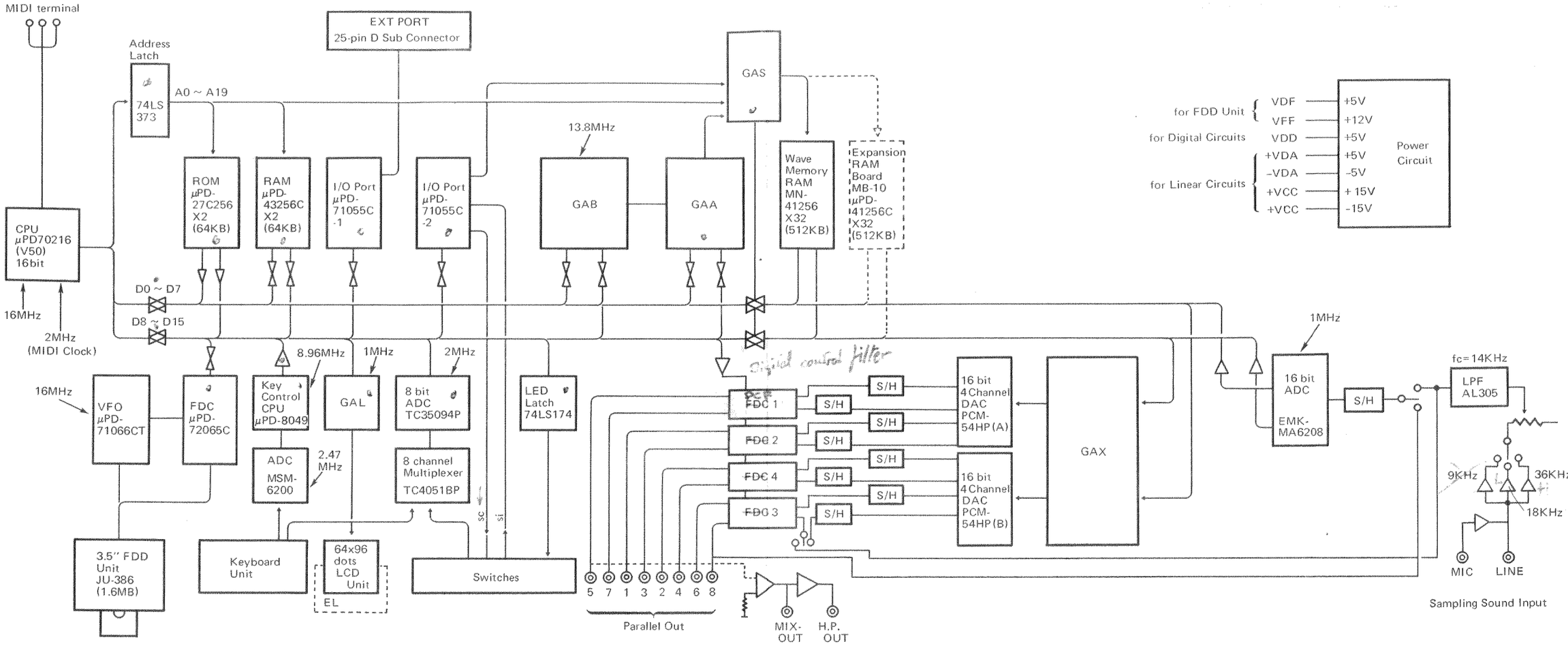
7. PCBs M5336-CN1, M5336-CN2, M5336-CN3





	A, H	E	F
F1	MT4-1.5A250V	—	Ⓢ T0.5A
F2	Ⓤ TSC4A125V	—	Ⓢ T 4A
F3	Ⓤ TSC1.6A125V	—	Ⓢ T1.6A
F4	Ⓤ TSC0.5A125V	—	Ⓢ T0.5A
F5	Ⓤ TSC0.5A125V	—	Ⓢ T0.5A

1. BLOCK DIAGRAM



The FZ-1 is a 16-bit sampling keyboard whose sampling frequency is 36KHz and sampled sound is saved or loaded in a floppy disc.

CPU μPD70216 is a 16-bit microprocessor and controls all the devices.
System ROMs contain the FZ-1's system program whereas System RAMs are for the work area of the program.

Recorded sound's waveform is transformed in 16-bit x 512K steps digital data (1,024K steps when optional RAM board is equipped) by a 16-bit ADC (Analog to Digital Converter) EMK-MA6208 and stored in Wave Memory of 32 pieces of 256K-bit dynamic RAMs.

The gate arrays GAA and GAB are for accessing of Wave Memory RAMs.

When Playbacking, data from Wave Memory pass through gate array GAS which controls the Cross Fading.

The outputs of GAS are transformed in analog waveforms by two DACs PCM-54HP (A) and (B).

By means of time sharing, S/H (Sample and Hold) circuits separate the eight DAC outputs one by one and send them to FDCs which is a digital controlled filter and gain controller.

Together with Key Velocity Controller MSM6200, Key CPU μPD8049 controls the key scanning. According to a key pressure strength, after touch detector in Keyboard unit output a voltage which is converted in a digital data in 8-bit ADC TC35094P and sent to the CPU.
TC35094P also converts analog inputs from Pitch Bender, Modulator, Data Entry, and sampling sound level into digital data.

Gate array GAL is a interface between CPU and 64x96 dots graphic LCD Unit.

μPD71055Cs are I/O Ports and performs switch scanning, upper address designation of Wave Memory RAMs, and interface between the CPU and External device.

μPD72065 and μPD71066CT control the FDD (Floppy Disc Drive) JU-386.